STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT 1

TOM BLAINE, P.E.
NEW MEXICO STATE ENGINEER

5550 San Antonio Drive, N.E.
Albuquerque, NM 87109 (505) 383-4000

January 31, 2018

File No.: 1605 and B-28

Homestake Mining Company
c/o Thomas Wohlford
P.O. Box 98
Grants, NM 87020

RE: PLUGGING PLAN OF OPERATION B-28-S-247 (#951)

Mr. Wohlford,

Greetings:

Enclosed is the Well Plugging Plans of Operations, which has been approved subject to the Conditions of Approval, attached hereto.

If you have any questions or wish to discuss options to the Plan, please contact me at 505-383-4000 or by email at christopher.burrus@state.nm.us .

Sincerely,

Christopher Burrus
Water Resource Professional
Albuquerque, OSE, District 1

C: CB/cb
Cc: WRAB;
Emailed: William Pearson, NMED, MECS

90041138

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: B-28-S-247 (HMC 951)

Name of well owner: Homestake Mining Company

Mailing address: PO Box 98

City: Grants State: NM Zip code: 87020

Phone number: 505-287-4456 E-mail: twohlford@barrick.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Undetermined

New Mexico Well Driller License No.: _____ Expiration Date: _____

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 14 min, 51.01 sec
Longitude: 107 deg, 55 min, 25.84 sec, NAD 83

2) Reason(s) for plugging well:

Requested by the NMED

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 154 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 272 feet

7) Inside diameter of innermost casing: 10 inches.

8) Casing material: Steel

9) The well was constructed with:

☒ an open-hole production interval, state the open interval: 242-271

☐ a well screen or perforated pipe, state the screened interval(s): _____

10) What annular interval surrounding the artesian casing of this well is cement-grouted? Yes

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, escribe:

Surface casing was installed to a depth of 146'

12) Has all pumping equipment and associated piping been removed from the well? Yes If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

See attached Abandonment Plan Description for abandonment details

2) Will well head be cut-off below land surface after plugging? Yes

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: See Tables A and B

4) Type of Cement proposed: Portland Cement API Class B

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: X batch-mixed and delivered to the site

_____ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

N/A

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

See attached Abandonment Plan Description for abandonment details.
#3 NMED DP-200

VIII. SIGNATURE:

I, Thomas Wohlford, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Thomas P. Wohlford — Signature of Applicant

12-04-17 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.

~~Not approved for the reasons provided on the attached letter.~~

Witness my hand and official seal this 31 day of January, 2018

Tom Blaine P.E., New Mexico State Engineer

By: _____

2017 DEC -5 AM 11:24

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)	120	2	
Bottom of proposed interval of grout placement (ft bgl)	217	120	
Theoretical volume of grout required per interval (gallons)	396	481	
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement	6	6	
Mixed on-site or batch-mixed and delivered?	API Class B Batch-mixed	API Class B Batch-mixed	
Grout additive 1 requested	N/A	N/A	
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested	N/A	N/A	
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)	217		
Bottom of proposed sealant of grout placement (ft bgl)	tagged bottom of well		
Theoretical volume of sealant required per interval (gallons)	7-200		
Proposed abandonment sealant (manufacturer and trade name)	Bentonite Chips with limited amount of silica sand if needed		

Well 951 Abandonment Plan Description

The attached B-28-S-247 (HMC 951) abandonment plan proposes the following abandonment procedures following the cessation of its use as a monitoring point. It is proposed that a 6" drill bit is used to either drill to 217' bgl if there's an obstruction or to tag and confirm the total depth of the well. If the bottom is tagged below 217', a bentonite plug placed via dump bailer or tremie pipe from the bottom of the well to 217' bgl is proposed. If the bottom is drilled out to 217', then a 5' bentonite plug is proposed to be placed via dump bailer or tremie pipe. The bentonite chips will have a limited amount of graded silica sand added to prevent bridging if needed. The 217 feet below ground surface is estimated to be 10 feet above the top of the San Andres aquifer. The total theoretical bentonite volume needed should be between 7 and 200 gallons.

Above the bentonite seal, perforating the casing from 217' to 120' bgl and then placing neat cement via tremie pipe for the same interval is proposed. The perforations can be completed using a mechanical perforator, such as the one available from Holte, or completed using a perforating gun. If the perforations are done with a gun, they should have a density of at least 4 perforations per linear foot of casing and have a hole size a minimum of 0.3" in diameter. The columns of perforations will extend 15 feet along each 20 foot interval, in order to preserve some strength in the casing to prevent collapse. If the mechanical perforator is used, there should be a minimum of 6 columns distributed around the circumference of the casing. The requirement of 15 foot interval of perforations with 5 foot interruption for casing stability is applicable for this method as well. The recommended neat cement would be API Class B and mixed with no more than 6 gallons of water per 94 pound bag of cement. The amount of cement needed would be approximately 396 gallons. The cement would be allowed to set 48 hours prior to any additional cement being placed above it. The same proposed neat cement would be used to fill the interval from 120' to 2' bgl and would need approximately 481 gallons. The casing would be cut off 2 feet below land surface and backfilled.

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TOM BLAINE, P.E.
NEW MEXICO STATE ENGINEER

5550 San Antonio Drive, N.E.
Albuquerque, NM 87109 (505) 383-4000

Materials submitted by Homestake Mining Company (HMC) identify one (1) 12-inch borehole with a 10-inch inner diameter (I.D.) cased well completed in a confined aquifer drilled to total depth of 275-feet below ground surface (bgs). The construction of the well does not meet 19.27.4.31 NMAC. A New Mexico licensed driller has not been selected at this time.

Permittee: Homestake Mining Company
c/o Tom Wohlford, Closure Manager
P.O. Box 98
Grants, NM 87020

Approximate coordinates: Latitude: 35° 14' 51.01" N, Longitude: 107° 55' 25.84" W

SPECIFIC PLUGGING CONDITIONS OF APPROVAL FOR ONE CONFINED AQUIFER/ARTESIAN WELL B-28-S-247 (A/K/A HOMESTAKE #951), BLUEWATER UNDERGROUND BASIN LOCATED IN SW1/4 SW1/4 SW1/4 SECTION 20, TOWNSHIP 12 NORTH, RANGE 10 WEST

1. Water well drilling and well drilling activities, including well plugging, are regulated under NMAC 19.27.4, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. **Measurement of the current static water level in the well prior to initiation of plugging IS REQUIRED, and shall be recorded on line II.7. of the Plugging Record.**

3. Theoretical volume of sealant, calculated by the Halliburton eRedBook[tm], required for the abandonment of B-28-S-247 is approximately 1,122 gallons.

4. **Plugging by use of Type I/II Portland Cement** is authorized as a sealant. Fundamental water demand for Type I/II Portland neat cement grout is 5.2 gallons per 94 lb/sack cement. The American Water Works Association (AWWA) Standard A100-06 allows up to 6.0 gallons water per sack (a less viscous mix), which may be used if necessary to aid placement of the slurry in well. NMAC 19.27.4.30.C.1 specifies **placement of sealant by use of tremie pipe**. When a tremie is used for grout/chip/pellet placement, it shall extend to near the total depth of the borehole/well at the initiation of plugging. The tremie shall be incrementally removed to retain the tremie bottom a limited distance above the top of the rising column of sealant throughout the plugging process. Pumping the sealant down the tremie with fresh water is allowed.

Alternative plugging by use of Type I/II Portland and Sand Mixture is also authorized. The American Water Works Association (AWWA) Standard A100-06 and NMOSE, allows up to 1 part by weight of sand to 1 part cement with no more than 6 gallons of water per 94 lb sack of cement, may be used if necessary to aid placement of the slurry in well. 19.27.4.30.C.1 NMAC specifies **placement of sealant by use of tremie pipe**. When a tremie is used for grout/chip/pellet placement, it shall extend to near the total depth of the borehole/well at the initiation of plugging. The tremie shall be incrementally removed to retain the tremie bottom a limited distance above the top of the rising column of chips or pellets throughout the plugging process.

5. NMOSE does not grant a variance to 19.27.4.30.C.1 NMAC requirement for placement of sealant using a dump bailer.

6. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

7. NMOSE witnessing of the plugging will be required. NMOSE witnessing may be requested during normal work hours by calling the District 1 NMOSE Office at 505-383-4000, at least 48-hours in advance. NMOSE inspection will occur dependant on personnel availability.

8. A Well Plugging Report itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, 5550 San Antonio Dr. N.E., Albuquerque, NM 87109), within 20 days after completion of well plugging. Please attach a copy of these plugging conditions.

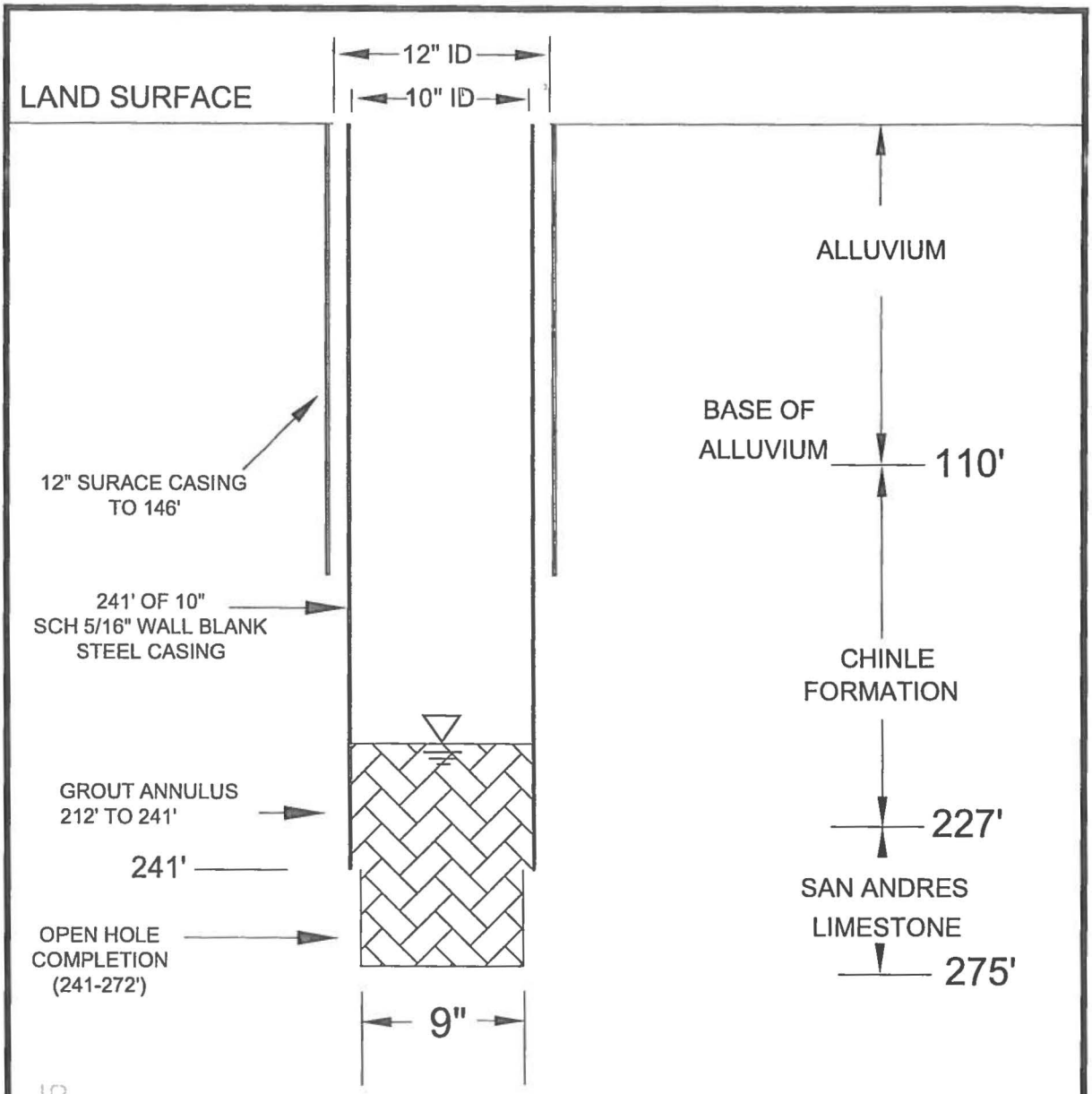
The NMOSE Well Plugging Plan of Operations is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 31 day of January, 2018.

Tom Blaine P.E.,
STATE ENGINEER

By: _____

Christopher Burrus
Water Resource Professional
District 1
Albuquerque, New Mexico



1" = 35' Vertical Scale
1" = 12" Horizontal Scale
DATE: 8/17/17
DWG: PROJECTS\2017-06\DWGS\951 to scale.DWG

HOMESTAKE MINING COMPANY

FIGURE 2-1. WELL 951 COMPLETION DETAILS

Table 1

OFFICE OF THE STATE ENGINEER SEALANT GUIDELINES FOR WELL CONSTRUCTION AND PLUGGING

(FOR USE IN NON-CONTAMINATED CONDITIONS)

				APPLICATION										
				Non-Artesian (Unconfined) Well			Artesian (Confined) Well					Special Conditions		
	SEALANT	HYDRATION REQUIREMENT	PLACEMENT METHOD	Plugging	Annular Seal	Surface Casing	Plugging (Non-flowing)	Plugging (Flowing)	Annular Seal (Non-flowing)	Annular Seal (Flowing)	Surface Casing	Dry Borehole (Upper 10 feet sealant; drill cuttings or clean native fill below)	Ground Source Heat Pump
MATERIALS & METHODS	Bentonite Chips*	Fresh water to be added above water column at rate of 5 gallons per 50-lb. sack/bucket	Pour < 20' and dry	√	√	√	√				Variance Only	√	
			Tremie	√	√	√	√		√			√	
	Bentonite Pellets*	Fresh water to be added above water column at rate of 5 gallons per 50-lb. sack/bucket	Pour < 20' and dry	√	√	√	√				Variance Only	√	
			Tremie	√	√	√	√		√			√	
	Time Release Bentonite Pellets*	Fresh water to be added above water column at rate of 5 gallons per 50-lb. sack/bucket	Pour < 20' and wet	√	√	√	√				Variance Only	√	
			Tremie	√	√	√	√		√			√	
	High-Solids Bentonite Grout	Manufacturers' mixing ratios to attain minimum 20% active solids by weight	Tremie	√	√	√	√		√		Variance Only	√	
	Neat Cement Slurry** (type I or II portland cement)	No more than 6.0 gallons water per 94-lb. sack portland cement	Tremie	√	√	√	√	√	√	√	√	√	√
			Pressure Grout		√	√			√	√	√		
	Cement-Bentonite Slurry** (type I or II portland cement plus bentonite powder)	Maximum 5.2 gallons water per 94- lb. sack portland cement PLUS 0.6 gallon per 1% increase in bentonite up to maximum 6% bentonite by dry weight ratio. Bentonite must be hydrated separately and then mixed.	Tremie	√	√	√	√		√	√	√	√	√
			Pressure Grout		√	√			√	√	√		
	Sand-Cement Grout** (max 1 part sand to 1 part portland cement by dry weight ratio)	No more than 6.0 gallons water to 94-lb. sack portland cement. Ok to moisten sand before mixing.	Tremie	√	√	√	√		√	√	√	√	√
			Pressure Grout		√	√			√	√	√		
	Thermally-Enhanced Grout	Manufacturers' mixing ratios to attain minimum 20% active solids by weight. Addition of fine sand not in excess of 400-lb per 50-lb sack of bentonite. Permeability must remain less than 10^{-7} cm/sec.	Tremie	√	√	√						√	√
	Stratified			Request Variance									
	Additives			Describe and Request on Plan									

I hereby approve the above sealant guidelines for well construction and plugging this 16 day of MAR 17 2016.

Tom Blaine

Tom Blaine, New Mexico State Engineer

*Groundwater concentrations of chloride and hardness are limited. **Groundwater concentrations of sulfates are limited.

Form WR-23 STATE ENGINEER OFFICE

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

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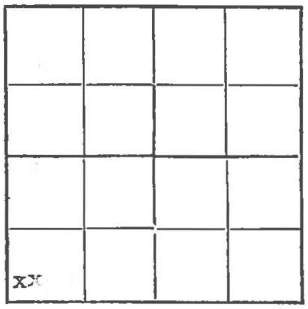
Section 1



(Plat of 640 acres)

(A) Owner of well Sabre - Pinon Corp.
Street and Number Bokum Bldg.
City Santa Fe State New Mexico
Well was drilled under Permit No B17-B18-B19-B20 and is located in the SW ¼ SW ¼ SW ¼ of Section 20 Twp. 12 N Rge. 10 W
(B) Drilling Contractor Howard Sheets Co. License No. W.D. 207
Street and Number 3540 Fourth St. N.W.
City Albuquerque State New Mexico
Drilling was commenced November 1956
Drilling was completed February 1 1957

Elevation at top of casing in feet above sea level ____ Total depth of well 275'
State whether well is shallow or artesian Shallow Depth to water upon completion 152'

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	104'	110'	6'	Sand Gravel and Red Clay - weak flow
2	138'	149'	11'	Grey Sandy Shale
3	242'	272'	30'	Light Brown Limestone - porous, This strata
4				will produce
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
12"I.D.	1/4"Wall	Welded	surface	146'	146'	-	none	
10"I.D.	5/16Wall	Welded	surface	242'	242'	Steel	none	

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used
App. 212'	241'	12"		20	Cement pumped in through tubing
					Casing lowered in cement
					Allowed to set 80 hours
					Drilled out plug

Section 5 PLUGGING RECORD

Name of Plugging Contractor ____ License No. ____
Street and Number ____ City ____ State ____
Tons of Clay used ____ Tons of Roughage used ____ Type of roughage ____
Plugging method used ____ Date Plugged ____ 19____
Plugging approved by:

____
Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

Date Received ____

File No. ____ Use ____ Location No. ____ ____ ____

Renumber to B-28-S-247 Homestead #951

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
0'	96'	96'	Grey to Black	Volcanic Rock
96'	104'	8'	Dark Grey	Cinders - Clay - Loose Rock
104'	110'	6'		Sand Gravel and Red Clay
110'	138'	28'	Dark Red	Clay (or Shale)
138'	149'	11'	Grey	Sandy Shale (Conglomeratic)
149'	159'	10'	Light Brown	Sandstone, hard
159'	176'	7'	Blue	Shale
176'	188'	12'	Dark Red	Shale
188'	197'	9'	Brown	Sandy Shale Conglomerate
197'	209'	12'	Reddish Brown	Sandstone
209'	217'	8'	Dark Red	Clay - Streaks Sandstone
217'	227'	10'	Grey	Shale Congomerate
227'	234'	7'	Grey	Limestone
234'	237'	3'	Yellow	Sandstone
237'	242'	5'	Yellow	Clay and Rock Comerate
242'	272'	30'	Light Brown	Limestone, porous. (San Andres ?)
272'	275'	3'	Dark Grey	Sandstone hard (Glorieta ?)

1 Copy

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Howard Sheets Co
Well Driller

By Howard H. Sheets